29. (Twice amended). A method for steganographically protecting a digital signal comprising:

a) providing a carrier signal that has been encoded with independent information; and

b) using a random or pseudo-random key to steganographically decode independent information including a digital watermark from the carrier signal.

43. (Twice amended) The method according to claim 42, further comprising of the step of:

h) using positions within [the] a sample window and a position within the input stream to index random or pseudo-random masks and compute a mapping function to determine encoding positions and encode digital watermark information into the sample window.

REQUEST FOR RECONSIDERATION

Applicant has amended claims 25, 29, and 43 in order to more particularly point out and distinctly claim that which Applicant regards as the invention. No new matter is introduced by these amendments, and these amendments are fully supported by the specification. Applicant respectfully requests that the Examiner enter these amendments and reconsider the present application in view of the foregoing amendments and the following remarks.

REMARKS

Claims 43-45 stand rejected under 35 U.S.C. § 112, ¶ 2, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 25, 28, 29, 32, 33, 35, 38, and 39 stand rejected under 35 U.S.C. § 102(e), as allegedly anticipated by U.S. Patent No. 5,520,759 to Braudaway et al ("Braudaway"). The following claims stand rejected under 35 U.S.C. § 103(a): claims 25, 29, 33, 35, 40-43, and 46-48, as allegedly rendered obvious by Bruce Schneier, *Applied Cryptography: Protocols, Algorithms, and Source Code in C* (1994) ("Schneier"); claims 26 and 30, as allegedly rendered obvious by Schneier or Braudaway in view of U.S. Patent No. 5,912,972 to Barton; claims 27 and 31, as allegedly rendered obvious by Schneier or Braudaway

as applied to claims 25 and 29; claim 34, as allegedly rendered obvious by Schneier or Braudaway as applied to claim 33; claim 36, as allegedly rendered obvious by Braudaway as applied to claim 29, and further in view of U.S. Patent No. 5,530,751 to Morris; claim 37, as allegedly rendered obvious by Schneier or Braudaway as applied to claim 29, and further in view of U.S. Patent No. 5,930,377 to Powell et al. ("Powell); claims 44, 45, and 49, as allegedly rendered obvious by Schneier or Braudaway as applied to claims 43, 44, and 48, and further in view of Cox et al., "Secure Spread Spectrum Watermarking for Multimedia" ("Cox"); claims 50-51 and 58-61, as allegedly rendered obvious by Schneier or Braudaway as applied to claims 41 and 48, and further in view of Barton; claims 52-55, as allegedly rendered obvious by Schneier or Braudaway as applied to claim 25, and further in view of Barton; and claims 56-57, as allegedly rendered obvious by Schneier or Braudaway as applied to claim 55. Applicant respectfully disagrees.

1.   35 U.S.C. § 112, ¶ 2 Rejections

Claims 43-45 stand rejected as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Office Action asserts that "[c]laims 43 and 44 recite the limitation 'the sample window' in line 2. There is insufficient antecedent basis for this limitation in the claim. The examiner assumes that this is meant to read either 'a sample window' or 'the sample windows.'" Office Action, Page 3. In response, Applicant has amended claim 43 to recite "a sample window." In view of these amendments, Applicant respectfully requests that this rejection be withdrawn.

2.   35 U.S.C. § 102(e) Rejections

Claims 25, 28, 29, 32, 33, 35, 38, and 39 stand rejected as allegedly anticipated by Braudaway. Specifically, the Office Action asserts that Braudaway discloses

> using a random or pseudo-random key in the process of putting a watermark into data in lines 21-26 of the seventh column. Lines 56-57 of column one say that there are watermarks that identify copyright owners. By watermarking the data, Braudaway et al.'s method creates a first derivative encoded signal. It is inherent that attempts to decode the watermark without the proper key would further obfuscate the information. It was once theorized that encrypting information with two keys in order to strengthen security could in fact be mimicked by using one

key which would possibly be easier to break. Although this theory has since been proven incorrect, the immediate solution was to strengthen security by encrypting with a first key and then decrypting with a non-corresponding second key. Providing information is inherent.

In the abstract, Braudaway et al. say that certain pixels brightness are altered as a result of the watermark. This change in brightness anticipates claim 38's spectral values. Also in the abstract, Braudaway et al. talk about using only certain non-transparent values of the watermarks. These non-transparent values form a map to meet claim 39.

Office Action, Pages 3-4. Applicant respectfully disagrees.

In order for a reference to anticipate a claim, that reference must disclose each and every element of the claimed invention. Independent claim 25 recites, inter alia, "[a] method for steganographically protecting a digital signal comprising . . . using a random or pseudo-random key to steganographically encode independent information including a digital watermark into the carrier signal." Independent claim 29, which is a method of steganographically decoding, recites similar limitations. Applicant submits that this rejection of these claims is improper as the focus of the claims is very different from the methods disclosed in the reference.

Braudaway employs a visible watermark on a digital image. See Braudaway, abstract ("A system for placing a visible 'watermark' on a digital image is disclosed . . . .")[1] Employing visible watermarks on digital images is not steganography, as defined in the application. See Appl'n, Page 3, Lines 18-24 ("'steganography' is a field . . . that covers numerous methods for hiding an informational message within some other medium . . . in such a manner that an unintended party who intercepts the medium carrying message does not know it contains this hidden message and therefore does not obtain the information in the hidden message. In other words, steganography seeks to hide messages in plain view." (emphasis added)). Thus, the method of the present invention does not produce a visible watermark; instead, the present invention discloses embedding independent information in the carrier signal without producing a perceptible change in the carrier signal.

---

[1] This passage is even cited by the Examiner later, when the Examiner discusses the "change in brightness" in the pixels disclosed in the abstract of Braudaway.

That Braudaway fails to anticipate the claimed invention is made most clear in the final paragraph of this rejection. The Examiner discusses the change in brightness of the pixels that are altered by Braudaway's method, which results in a visibly altered image. This is simply not what is disclosed or claimed in the present application. The method of the present invention is used to establish responsibility for a copy (discussed throughout the application, including on page 4, line 26 - page 5, line 2) by encoding independent information into the carrier signal imperceptibly. Thus, the basic underlying purpose, both described and claimed, has been ignored. Although Applicant does not agree with this rejection, solely in an effort to expedite the prosecution of this application, Applicant has amended independent claims 25 and 29 to recite "steganographically" encoding or decoding, where appropriate.

The Examiner's discussion on two key encryption is may be based on a misunderstanding of the invention. With steganographic ciphering of the present invention, defined on page 7, neither key is used for embedding or obfuscation. Thus, the Examiner's assertion appears to be irrelevant to the patentability of the pending claims.

In view of the discussion above, it is clear that Braudaway does not disclose or suggest all limitations of independent claims 25 and 29, or the claims that depend therefrom. Therefore, Applicant respectfully requests that the rejection of these claims be withdrawn.

In an effort to expedite the prosecution of this application, Applicant will also address some of the outstanding rejections individually.

With regard to claim 33, contrary to the Examiner's assertion, the first derivative encoded signal disclosed in Braudaway is not "an arbitrarily close approximation of the original carrier signal," as claimed in 33. If it were, Braudaway would not be effective. Braudaway is not steganographic - it relies on a visual alteration of the digital image to discourage piracy. No independent information is encoded in the carrier signal. Therefore, Applicant respectfully requests that this rejection be withdrawn.

Further, Applicant objects to the Examiner's unsupported assertion that it is "inherent that attempts to decode the watermark without the proper key would further obfuscate the information." Office Action, Pages 3-4. This assertion is contrary to the disclosure of Braudaway - Braudaway clearly discloses that visible watermarks discourage piracy. See Braudaway, Col. 1, Lines 11-61. An attacker who wants to remove a visible watermark can easily identify the pixels that must be altered. With steganographically-embedded information,

- 5 -

however, the attacker does not know where to look. A randomization attack is possible, but a randomized attack is likely to degrade the carrier. One skilled in the art would not use a random attack, but would try to change the visibly noticeable pixels back to their original state - and this is not obfuscation.

With regard to claim 38, the change in brightness, disclosed in the Braudaway's abstract, does not anticipate the step of "decoding a single message bit from a signal spectral value by mapping the single spectral into a range of spectral values which indicate a particular message bit value." As discussed above, Braudaway causes a visible change in the brightness of the pixels of the digital image. The present invention, however, does not cause a perceptible change in the carrier signal because it is a steganographic method.

In addition, with regard to claim 39, the Examiner asserts that "[t]he non-transparent values of the watermark . . . form a map to meet claim 39." Office Action, Page 4. Applicant maintains that there is not disclosure of a map of addition information to the carrier signal. It appears that the Examiner is attempting to equate a non-transparent value to a stega-cipher truth table. This is simply not the case. During the embedding process, imperceptibility can be achieved.

In summation, Braudaway fails to disclose each and every element of independent claims 25 and 29, and of all claims dependent therefrom. Therefore, Applicant respectfully requests that the rejection of these claims be withdrawn, and that these claims pass to allowance.

3.   35 U.S.C. § 103(a) Rejections

    a.   Claims 25, 29, 33, 35, 40-43, and 46-48

Claims 25, 29, 33, 35, 40-43, and 46-48 stand rejected as allegedly rendered obvious by Schneier. Specifically, the Office Action asserts that Schneier discloses

> encrypting subliminal data into a message using a symmetric key. This is equivalent to encoding independent information into a signal. Official notice is taken that digital watermarks, which imperceptibly incorporate data about information into that information, are old and well-known as subliminal data used to authenticate documents. Therefore, it would have been obvious . . . to make the subliminal data of Schneier a digital watermark capable of authenticating information.

Office Action, Pages 4-5. Applicant respectfully disagrees because the Office Action has failed to establish a prima facie case of obviousness.

In order to establish a prima facie case of obviousness, at least two criteria must be met. First, there must be some motivation or suggestion to make the proposed combination or modification of the references. Further, "the teaching or suggestion to make the claimed combination must be found in the prior art, and not based on the applicant's disclosure." MPEP 2142, discussing In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). In addition, the combined references must teach or suggest all claim limitations.

The statement of the rejection in the Office Action does not refer to any evidence of motivation to make the proposed combination of references. According to the MPEP,

> [i]n order to support a conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention obvious in light of the teachings of the references.

MPEP 2142 (citing Ex parte Clapp, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) (emphasis added)). Further, "[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper." MPEP 2142 (citing Ex parte Skinner, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1988)).

The Federal Circuit has recently emphasized the importance of providing evidence of motivation to combine in Winner Int'l Royalty Corp. v. Ching-Rong Wang. "When an obviousness determination is based on multiple prior art references, there must be a showing of some 'teaching, suggestion, or reason' to combine the references." Winner Int'l Royalty Corp. v. Ching-Rong Wang, No. 98-1553 slip op. at 14 (Fed. Cir. January 27, 2000) (quoting Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997)). "Although a reference need not expressly teach that the disclosure contained therein should be combined with another . . . the showing of combinability, in whatever form, must nevertheless be 'clear and particular.'" Winner at 15 (citations omitted)(quoting In re Dembiczak, 175 F.3d 994, 999, 50 USPQ 2d 1614, 1617 (Fed. Cir. 1999)). Further, the "absence of such a suggestion to combine is dispositive in an obviousness determination." Gambro, 110

F.3d at 1579 (citing <u>SmithKline Diagnostics, Inc. v. Helena Lab. Corp.</u>, 879 F.2d 878, 886-87, 8 USPQ2d 1468, 1475 (Fed. Cir. 1988) (emphasis added). It is improper to rely on hindsight to supply the motivation to make the combination of references. <u>See</u> <u>Dembiczak</u> 175 F.3d at 999, 50 USPQ2d at 1617 (indicating that "the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is a rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references").

Applicant submits that the Examiner has not satisfied his initial burden in providing "clear and particular" evidence of motivation to combine. Instead, it appears that the Examiner has simply identified references that allegedly disclose the elements of the claim, and has combined them. Even assuming <u>arguendo</u> that the references contained all elements of the claimed invention, it is still impermissible to reject a claim as being obvious simply "by locating references which describe various aspects of a patent applicant's invention <u>without also providing evidence of the motivating force</u> which would impel one skilled in the art to do what the patent applicant has done." <u>Ex parte Levengood</u>, 28 USPQ2d 1300, 1303 (Bd. Pat. App. & Inter. 1993) (emphasis added). In the absence of such evidence, Applicant respectfully requests that the rejection be withdrawn.

In addition, there is no suggestion in Schneier of "<u>steganographically</u> encod[ing] independent information including a digital watermark into the carrier signal" as recited in independent claim 25.[2] The Examiner recognizes this by stating that "DES is an encryption standard," not a steganographic cipher. DES is not disclosed in Schneier to be a steganographic cipher, and, as such, Schneier <u>teaches</u> <u>away</u> from the present invention, and Applicant respectfully requests that the rejection of this claim be withdrawn.

Applicant reiterates the previously-submitted argument that Schneier's method of hiding a subliminal message in a digital signature that is attached to a message is considerably different from the claimed invention:

> Gustavus Simmons invented the concept of a subliminal channel in a conventional digital signature algorithm. <u>Since the subliminal messages are hidden in what looks like normal digital signature, this is a form of obfuscation.</u> Walter sees signed innocuous messages pass back and forth, but he completely misses the information being sent over the subliminal channel. . . . Signed

---

[2] Independent claim 29 recites similar limitations.

messages using a digital signature algorithm look no different from signed messages with <u>subliminal messages embedded in the signature</u>.

Schneier at 67 (emphasis added). Indeed, the secret communication (i.e., the subliminal message) is not hidden in the innocuous message, but rather, in the digital signature that is attached. As such, Schneier does not disclose the step of using a random key to encode a digital watermark into a carrier signal.

The Examiner responds to this argument by asserting (unsupportedly) that "[a] signature is part of a handwritten message, and thus the examiner considers a digital signature to be part of a message" Office Action, Page 2. Although Applicant could debate whether a handwritten signature is actually part of the message, or just an attachment to the message body, it is completely irrelevant.

In addition, the references disclose nothing about the carrier signal's characteristics. Nor is it apparent, as with a stega-cipher, that there is a different cipher for audio versus video or images. A subliminal channel is not embedded in the main carrier signal, or channel, but in a separate channel that is communicated without detection. This is not what Applicant claims.

Further, Applicant respectfully traverses the Examiner's Official Notice of the use of digital watermarks that "imperceptibly incorporate data about information into the information" and request that the Examiner support the subject matter taken under Official Notice by either an affidavit or a reference, as required by the MPEP. <u>See</u> MPEP 2144.03 ("If the applicant traverses such an assertion the examiner should cite a reference in support of his or her position."; "When a rejection is based on facts within the personal knowledge of the examiner, the data should be stated as specifically as possible, and the facts must be supported, when called for by the applicant, by an affidavit from the examiner."). Therefore, in the absence of such evidence, Applicant respectfully requests that the rejection of these claims be withdrawn.

The Examiner makes several inaccurate conclusions with respect to the Digital Encryption Standard. The Examiner asserts

> Chapter 10 of Schneier deals with the Digital Encryption Standard. DES uses an effectively 56-bit key. As described on pages 224-226, this key is broken down and permutted into the encryption of block data. The key breakdown and the subsequent permutation correspond to applicant's mask set. DES uses starting vectors and padding at the end of messages. These correspond to the start of

message delimiter and number of bytes to follow the message of claims 42 and 47. Claims 43 and 48 are anticipated by DES' mixing of the two 32-bit blocks and the integration of the key. It would have been obvious . . . to encrypt the key-encrypted watermark data of Schneier with DES because DES is an encryption standard.

Office Action, Page 5. Applicant maintains that, although DES is an encryption standard, nothing in Schneier discloses steganographic ciphering. DES processes data without regard to the perceptibility of the data. Thus, there is not a "mask set" in a DES cipher. Contrary to the Examiner's assertion, the key breakdown and permutations are simply data, but do not comprise the mask set claimed in the present application. Further, Applicant notes that the Examiner has not provided any support for the assertion that the key breakdown and permutations "correspond to the start message delimiter and number of bytes to follow the message of [Applicant's] invention." Id. Nothing in Schneier even remotely suggests this. Therefore, Applicant respectfully requests that the rejection of these claims be withdrawn.

b. Claims 26 and 30

Claims 26 and 30 stand rejected as allegedly rendered obvious by Schneier or Braudaway in view of Barton. The Examiner asserts that Schneier and Braudaway disclose "encrypting digital watermarks into information with a key. [The references do] not say that the information includes a stream of digital samples. Barton teaches embedding authenticating information within a stream of digital data. Therefore, it would have been obvious . . . to authenticate the digital sample streams as in Barton with the key-encrypted watermarks of Schneier." Office Action, Pages 5-6. Applicant respectfully disagrees, because the Examiner has failed to establish a prima facie case of obviousness.

Similar to the rejections above, this rejection may also be a product of a misunderstanding of the present invention. As discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. Second, Barton does not disclose the use of mask sets or mask keys when embedding authentication information. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of these claims be withdrawn.

Regardless, claims 26 and 30 are dependent on independent claims 25 and 29, respectively. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claims 25 and 29 . Barton fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claims 25 and 29 are nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

c.   Claims 27 and 31

Claims 27 and 31 stand rejected as allegedly rendered obvious by Schneier or Braudaway as applied to claims 25 and 29. The Examiner asserts that Schneier and Braudaway disclose "encrypting digital watermarks into information with a key. [The references do] not disclose that the information includes a continuous analog waveform. Official notice is taken that continuous analog waveforms are old and well-known. Since they can carry information, continuous analog waveforms sometimes need to be authenticated. Therefore, it would have been obvious . . . to authenticate continuous analog waveforms with the key-encrypted watermarks of Schneier." Office Action, Page 6. Applicant respectfully disagrees.

As discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Again, this rejection may be a product of a misunderstanding of the present invention. Second, Barton does not use mask sets or mask keys when embedding authentication information. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of these claims be withdrawn.

Regardless, claims 27 and 31 are dependent on independent claims 25 and 29, respectively. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claims 25 and 29. The subject matter for which Official Notice is taken fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596

DC01:259307.5

- 11 -

(Fed. Cir. 1988). Because Applicant maintains that independent claims 25 and 29 are nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

d. Claim 34

Claim 34 stands rejected as allegedly rendered obvious by Schneier or Braudaway as applied to claim 33. The Examiner asserts that Schneier and Braudaway disclose "encrypting digital watermarks into information with a key. [The references do] not say that the information is then modified. Encryption modifies data. Official notice is taken that encrypting information in order to protect the data from unauthorized viewing is old and well-known. Therefore, it would have been obvious . . . to protect the watermarked data of Schneier by encrypting it." Office Action, Page 6. Applicant respectfully disagrees.

The Examiner has not provided evidence of motivation to make the proposed modification of Braudaway or Schneier. Again, the Examiner seems to be asserting that protecting the data from unauthorized viewing is the motivation for these modifications. Steganographic ciphers do no such thing; as discussed earlier, and defined in the application, the information is not protected from unauthorized viewing. The information is in plain view. The present invention, however, serves to establish responsibility for a digitized content or a data signal. Therefore, because the stated motivation would not motivate one of ordinary skill in the art to modify either reference, Applicant respectfully requests that this rejection be withdrawn.

Applicant respectfully traverses the subject matter for which Official Notice is taken. Although the assertion that "encryption modifies data" may be accurate, it is more accurately stated that "encryption modifies data perceptively." If the Examiner is taking Official Notice of encryption modifying data imperceptibly, Applicant respectfully traverses this rejection, and request that the Examiner produce an affidavit or a reference in support of his position. In the absence of such evidence, Applicant respectfully requests that this rejection be withdrawn.

First, as discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Second, Barton does not use mask sets or mask keys when embedding authentication information. Therefore, the combined references fail to disclose or suggest all

- 12 -

claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of this claim be withdrawn.

Regardless, claim 34 is dependent on independent claim 29. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claim 29. The subject matter for which Official Notice is taken fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claim 29 is nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

e. Claim 36

Claim 36 stands rejected as allegedly rendered obvious by Braudaway as applied to claim 29, and further in view of Morris. The Examiner again asserts that Schneier and Braudaway disclose "encrypting digital watermarks into information with a key. [The references do] not say that one bit is read out of every sample for the watermark. In lines of 50-52 of the third column, Morris says that the human ear cannot detect the difference between a sound value of 64000 and 64001. This would be a one-bit change of the least significant bit. As taught by Morris, these small changes can be used to carry identification codes. Therefore, it would have been obvious . . . to discretely carry the watermark information of Braudaway et al. of Schneier in the least significant bits as taught by Morris." Office Action, Page 7. Applicant respectfully disagrees.

Morris does not disclose "decoding a single message bit from a single sample by reading a simple bit of the single sample as the message bit." Further, as discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Also, Barton does not use mask sets or mask keys when embedding authentication information. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of this claim be withdrawn.

Regardless, claim 36 is dependent on independent claim 29. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the

limitations of independent claim 29. Morris fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claim 29 is nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

       f.   Claim 37

Claim 37 stands rejected as allegedly rendered obvious by Schneier or Braudaway as applied to claim 29, and further in view of Powell. Specifically, the Examiner asserts that Schneier and Braudaway "teach encrypting digital watermarks into information with a key. They do not say that samples are mapped to extract bits or information. As is explained in their abstract and diagrams, Powell et al. teach a method of embedding a digital watermark which requires use of a map or an image to determine the places to embed the watermark. This method is advantageous because, as explained in lines 42-43 of column 1, it is resistant to image modification. Therefore, it would have been obvious . . . to employ the mapping techniques of Powell to the encryption system of Schneier or Braudaway et al. so as to make the data's watermark resistant to data modification." Office Action, Pages 7-8. Applicant respectfully disagrees.

First, as discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Second, Powell does not disclose such a limitation. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of this claim be withdrawn.

Regardless, claim 37 is dependent on independent claim 29. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claim 29. Powell fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claim 29 is

nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

g.   Claims 44, 45, and 49

Claims 44, 45, and 49 stand rejected as allegedly rendered obvious by Schneier or Braudaway as applied to claims 43, 44, and 48, and further in view of Cox. Specifically, the Examiner asserts that Schneier and Braudaway "teach encrypting digital watermarks into information with a key. They do not say that data is spectrally spread before insertion of the digital watermark[]. In their abstract, Cox et al. talk about the advantages, which include versatility, difficulty of watermark removal, and robustness, of their spectrally spreading data, inserting the watermark, and then putting the watermarked data through an inverse spectral spread. Therefore, it would have been obvious . . . to reap the benefits of Cox et al.'s method in Schneier or Braudaway et al.'s system." Office Action, Page 8. Applicant respectfully disagrees.

The Examiner has provided no evidence of motivation to make the combination of references. All that the Examiner provides is an unsupported statement that "it would have been obvious . . . to reap the benefits" of Cox. This statement is not "clear and particular" evidence of motivation to combine, as required by the MPEP. Therefore, in the absence of motivation to make the proposed combination of references, Applicant respectfully requests that this rejection be withdrawn.

Assuming arguendo that there is evidence of motivation to combine, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Also, although Cox may discuss advantages in the abstract, Cox does not disclose such. Instead, Cox' paper discloses that the original signal is used for decode. Also, Cox is concerned solely with frequency embedding; no message delimiter, for error correction, or convolution mask, is disclosed to give better robustness. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of this claim be withdrawn.

Regardless, claims 44 and 45 are dependent on independent claim 25, while claim 49 is dependent on independent claim 29. As discussed above, and contrary to the Office

DC01:259307.5

- 15 -

Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claims 25 and 29. Cox fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claims 25 and 29 are nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

        h.   Claims 50-51 and 58-61

Claims 50-51 and 58-61 stand rejected as allegedly rendered obvious by Schneier or Braudaway as applied to claims 41 and 48, and further in view of Barton. Specifically, the Examiner asserts that Schneier and Braudaway "teach encrypting digital watermarks into information with a key. They do not say that a digital signature or hash of the start of message delimiter is validated. In his second figure, Barton shows a digital signature being used as an authentication tool. Digital signatures are made so that they are unique to the article which they authenticate. Therefore, it would have been obvious . . . to use a digital signature, as taught by Barton, to verify the message sent by Schneier or Braudaway et al." Office Action, Pages 8-9. Applicant respectfully disagrees.

As discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Also, Barton does not provide mapping for maximizing an encoding level. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of this claim be withdrawn.

Regardless, claim 50 is dependent on independent claim 25, and claims 51 and 58-61 are dependent on independent claim 29. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claims 25 and 29. Barton fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claims 25 and 29 are nonobvious,

Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

        i.   <u>Claims 52-55</u>

Claims 52-55 stand rejected as allegedly rendered obvious by Schneier or Braudaway as applied to claim 25, and further in view of Barton. Specifically, the Examiner asserts that Schneier and Braudaway "teach encrypting digital watermarks into information with a key. They do not say that each sample has unique watermark information. In lines 20-33 of column 4, Barton teaches including sequence data with the authentication data. The authentication data is a reduced representation of digital data. Therefore, it would have been obvious . . . to uniquely identify different samples so that the samples can be placed in the correct order. Unique watermarks could also deter cryptanalysis attacks." Office Action, Page 9. The Examiner continues, asserting "[p]re-processing sample windows is inherent, as is determining which and how many windows will contain watermark information." <u>Id.</u> Applicant respectfully disagrees.

As discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Also, the "sequence data" that Barton discloses is not the same as the "unique data" claimed in claims 52-55. Further, Barton does not disclose using a unique key with a unique watermark. Finally, Applicant respectfully traverses the Examiner's assertion regarding inherency. Applicant submits that this is not, in fact, inherent. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of this claim be withdrawn.

Regardless, claims 52-55 are dependent on independent claim 25. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claim 25. Barton fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting <u>In re Fine</u>, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claim 25 is nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

j. Claims 56-57

Claims 56-57 stand rejected as allegedly rendered obvious by Schneier or Braudaway as applied to claim 55. The Examiner asserts that Schneier and Braudaway "teach encrypting digital watermarks into information with a key. They do not say that the data that is watermarked is hashed and attached to itself. Official notice is taken that hashing data and then attaching the hash to the data is old and well-known. The hash acts as a verification. Digital signatures with message appendix are a common term implementation of this. Therefore, it would have been obvious . . . to attach a hash of the information to the information. The hash would be used to verify the integrity of the signal." Office Action, Page 10. Applicant respectfully disagrees.

Applicant first notes that the Examiner has neglected include Barton in this rejection. Without Barton, this rejection would be moot, as the Examiner requires Barton to reject claim 55, one of the intervening claims from which claims 56 and 57 depend. Therefore, solely to expedite the prosecution of this application, Applicant will interpret this rejection as being Schneider or Braudaway in view of Barton, as applied to claims 52-55.

As discussed above, neither Braudaway nor Schneier disclose a steganographic cipher. They simply do not disclose "encrypting digital watermarks into information with a key." Also, the "sequence data" that Barton discloses is not the same as the "unique data" claimed in claims 52-55. Further, Barton does not disclose using a unique key with a unique watermark. Finally, Applicant respectfully traverses the Examiner's assertion regarding inherency. Applicant submits that this is not, in fact, inherent. Therefore, the combined references fail to disclose or suggest all claim limitations of the pending claims; thus, Applicant respectfully requests that the rejection of this claim be withdrawn.

Regardless, claims 56-57 is dependent on independent claim 25. As discussed above, and contrary to the Office Action's assertion, neither Braudaway nor Schneier disclose the limitations of independent claim 25. Barton fails to cure this deficiency. Therefore, according to the MPEP, "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03, quoting In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Because Applicant maintains that independent claim 25 is

nonobvious, Applicant respectfully requests that the Examiner withdraw the rejection of all claims dependent therefrom.

CONCLUSION

Applicant maintains that this application is in condition for allowance, and such disposition is earnestly solicited. If the Examiner believes that an interview with Applicant's representative, either by telephone or in person, would further prosecution of this application, we would welcome the opportunity for such an interview.

Respectfully submitted,

BAKER & BOTTS, L.L.P.

Dated: May 12, 2000   By: _____

                              Robert A. King
                              Registration No. 42,738
                For: Floyd B. Chapman
                              Registration No. 40,555

Baker Botts, L.L.P.
The Warner; Suite 1300
1299 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2400
Tel: (202) 639-7700
Fax: (202) 639-7890